
Section 3 Historic Background

The current project area lies within the seaward portions of Hālawā Ahupua'a (the easternmost of the traditional Hawaiian land divisions or *ahupua'a* of the traditional 'Ewa District or *'Ewa Moku*) and Moanalua Ahupua'a (the westernmost of the *ahupua'a* of traditional Kona District or *Kona Moku*). There are numerous references to Hālawā in the traditional literature which may provide preliminary clues to the character of life—including patterns of settlement and land usage—during pre-western contact times. This section reviews the historical documentation which provides the reader with a glimpse into the rich past of Hālawā and Moanalua *ahupua'a*.

3.1 Hālawā Ahupua'a

3.1.1 Early Historic Period

Captain Cook first sighted O'ahu on January 18, 1778, but did not make a landing. Shortly after the death of Captain Cook, O'ahu had its first contact with foreigners when *HMS Resolution* and *HMS Discovery* landed at Waimea Bay on February 27, 1779. It was not until 1786 that the next contact with foreign ships were made when *HMS King George* under Captain Portlock and the Queen Charlotte under Captain Dixon pulled in at Wai'alae Bay for a brief four day stop to provision their ships. Visits by foreigners were much more frequent after 1786. (McAllister 1933:5)

Our first details about Hawaiian settlement in Hālawā come from explorer's accounts and maps such as Otto von Kotzebue's Oahu map of 1817 (Figure 8). While this early survey map should be understood as rather schematic, it is, however, understood to indicate the general pattern of coastal residence and agriculture. A quilt of ponded fields of taro (*lo'i kalo*) and fairly dense associated habitations extend from the western edge of the present HHCTCP study corridor section to the west. This dense pattern of occupation is understood to really begin in the immediate vicinity of the mouth of Hālawā Stream. It extended westward along the margins of Pearl Harbor with its abundant marine resources, relatively fertile soils, and numerous streams. In contrast is the relative lack of habitation and agriculture along the majority of the present study corridor. The post-erosional volcanic land forms of Makalapa, Āliamanu Crater and Salt Lake (Āliapa'akai) Crater effectively pushed Hālawā Stream to the northwest (and Moanalua Stream to the southeast) leaving these dry lands with relatively poor soils impossible to irrigate. Traditional patterns of life focused further inland where rainfall was higher and adjacent to the main trail from Kona to 'Ewa (see Figure 7).

The population of the islands of Hawai'i at contact, has been conservatively estimated to be between 100,000 on the low end, up to 400,000 (Schmitt 1977) but some recent estimates of population has been as high as 800,000-1,000,000 (Stannard 1989 & Kame'eleihiwa 1992). In the 1820's, both William Ellis (1823) and C. S. Stewart (1828) estimate the population of O'ahu to be about 20,000. (Ellis 1969:19; Stewart 1970:26) It is not clear how they came to arrive at this. Ellis writes about the Hawaiian population:

Compared with those of other islands, the inhabitants may be termed numerous. They were estimated by their discoverers at 400,000. There is reason to believe

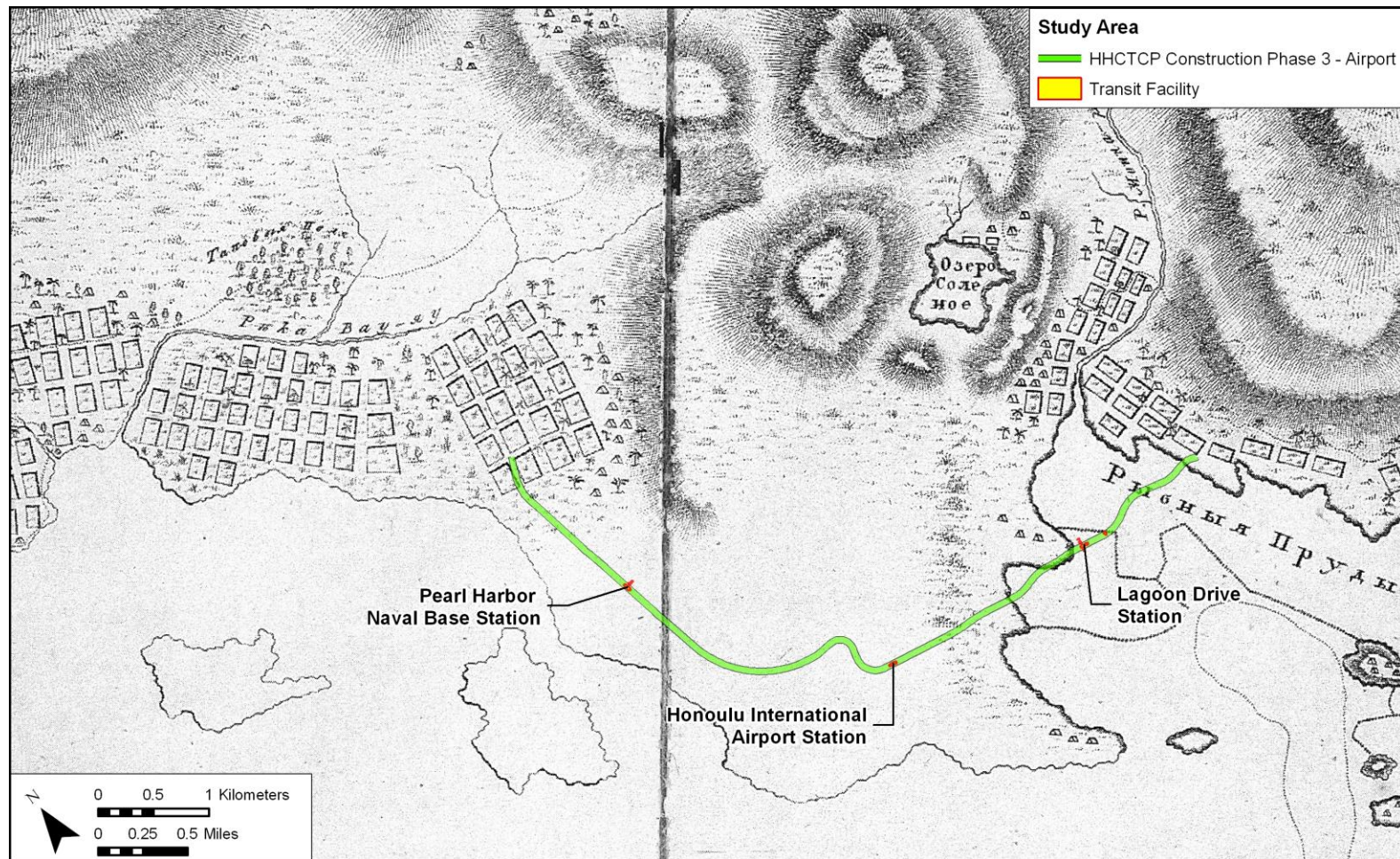


Figure 8. South Oahu Otto von Kotzebue map of 1817 identifies Salt Lake (“Озеро Соленое”), Mauna-Roa (Moanalua) River (“Р. Моуна-роа”), and fish ponds (“Рыбные Пруды”) along the shoreline of Moanalua. The map also shows a profusion taro *lo‘i* (irrigated fields) in the lowlands of Moanalua below Āliapa‘akai (Salt Lake), spreading out from Moanalua Stream and stretching back from the fishponds at the former shore (Note: this early survey map should be understood as rather schematic; but note: the relative lack of habitation along the corridor)

this was somewhat above the actual population at that time, though traces of deserted villages and numerous enclosures, formerly cultivated but now abandoned, are everywhere to be met with. At present it does not exceed 130,000 or 150,000, of which 85,000 inhabit the island of Hawaii. (Ellis 1969:23)

The missionaries are credited with taking the first census in 1831-32. Some mission stations took even more detailed records such as births, deaths and marriages; however, there was no uniformity among the different stations for this first count. The first census lists totals that cover fairly large geographical areas and information was not necessarily broken down into smaller *ahupua'a*, and no distinctions were made between sex, age, birth and death rates. (Schmitt 1973:1)

The 1831-32 census for O'ahu was 29,755, with Honolulu being the heaviest concentrated area with 13,344 people. After Honolulu, the 'Ewa district was the third largest with a count of 4,015. (Schmitt 1977:8-9) In this census, Hālawā was combined with 'Aiea. The census shows there were 163 males, 134 females, 72 male children and 35 female children; with a total count of 404 for the two *ahupua'a*. (Schmitt 1977: 19) The reasonable inference is that these *ahupua'a* were fairly well-populated but not densely populated in comparison to the other *ahupua'a* of 'Ewa at the time.

There are no separate population figures given for Hālawā until the 1835-36 census. At that time there were 104 males, 102 females, 48 male children, 29 female children; with a total count of 283 for the *ahupua'a*. The total for the *moku* of 'Ewa was 3,423; a decrease of 592 (seemingly a decline of 14.7% over 4 years) from the first census figures given.

In 1839, for the purposes of tax assessment, a law was passed to take an official government census which was to be carried out by the tax officers in the various districts. This was to have been done in 1840, but was not actually carried out. In 1846, a new law was enacted giving the responsibility of the computations to school officials. A count was undertaken in 1849, however, these are suspected to be under reported. It was not until 1850 that a more systematic and accurate census was conducted. (Schmitt 1977:3)

Sometime after Kamehameha conquered O'ahu in the battle of Nu'uānu in 1795 he gave his most trusted foreign advisors, Isaac Davis and John Young, some lands as a reward for their loyal service to him. As part of this award, each one received half of the *ahupua'a* of Hālawā. As was the usual custom at the time, the king divided the land among his chiefs who supported him throughout his conquests of the islands.

These lesser chiefs (Young and Davis) were allowed to work the land as long as they lived. But, as was the traditional custom, upon their death the land reverted back to the *ali'i nui* or paramount chief. This rule held true even for these two most faithful advisors. John Young tried to make his lands inheritable by requesting that his children, and those of Isaac Davis whom he adopted, be allowed to retain the lands given to him by the king upon his death. Even by the late date of 1834, Kamehameha III refused to honor Young's request. It is interesting to note that even though his request was denied, in the Māhele, John Young's children were allowed to keep lands as *'āina ho'olīna* or inherited lands. Lilikalā Kame'eiehiwa notes that in all of the Buke Māhele, these were the only lands given under this designation. (Kame'eiehiwa 1992:60)

Prior to John Young's death in 1835, he attempted to make his lands inheritable by willing Hālawā to his daughter, Grace Kama'iku'i. His will states:

. . . in behalf of my deceased friend Isaac Davis and for his children as he died without will, the King Kamehameha gave me all the said Isaac Davises [Davis'] lands to take care of them and his children until the children came of age, and now they are come of age so I think it right to leave my last wishes and will that the King, Ka'ahumanu, Adams and Rooke and all the Chiefs will let Isaac Davises children keep their father's lands that King Kamehameha gave to him as a reward for assisting the King in his wars in conquering the islands of Hawai'i, Maui, Molokai, and O'ahu, and which we have an undoubted right to leave to our children, which I hope in God our young king will fulfill the wishes of his honored father. My own lands, I wish my children to enjoy as I have done, likewise my wife . . . (Claim: #595 F.R. 67-72 V2)

3.1.2 The Māhele

The Organic Acts of 1845 and 1846 initiated the process of the Māhele - the division of Hawaiian lands - which introduced private property into Hawaiian society. In 1848, the crown and the *ali'i* (royalty) received their land titles. Kuleana awards for individual parcels within the *ahupua'a* were subsequently granted in 1850. These awards were presented to tenants, native Hawaiians, naturalized foreigners, non-Hawaiians born in the islands, or long-term resident foreigners who could prove occupancy on the parcels before 1845.

It seems clear that circa 1850 there was a relatively tight focus of Hālawā Ahupua'a settlement and agriculture a little more than a kilometer upstream of where the present study corridor crosses Hālawā Stream (Table 4, Figure 9 & Figure 10). This appears likely to have been a general pattern extending back in time for centuries with Hālawā habitation focused well inland. All of the land claims were inland of the present study alignment. There were no *kuleana* LCA claims on the coastal plains of Hālawā Ahupua'a except in the immediate vicinity of Hālawā Stream. However, it should be noted that an unnamed settlement (annotated as "Settlement 1840" on an Anderson and Bouthillier map; see Figure 16) just southwest of the area that would become known as Watertown in the Pearl Harbor entrance attests to coastal settlement that probably existed for centuries along the margins of the Pearl Harbor entrance and the East Loch of Pearl Harbor.

The only two Hālawā Ahupua'a claims were associated with Land Commission Awards 2131 and 2043. Kanihoali'i, and his heir Kaukiwaa were claimants for LCA No. 2131 (see Appendix A for more details). LCA No. 2131 consisted of two distinct pieces: a *lo'i kalo* & *kula* adjoining in the *'ili* of Kamau and 2d, a fish pond on the sea shore which is a *lihi 'āina* of the said *'ili 'āina* Kamau. It appears it was the Pu'uone Kalokoloa fishpond parcel that abutted the east side of the north end of the present study area, just northeast of Hālawā Stream (see Figure 9 and Figure 10) and that the *lo'i* and *kula* claim was well inland (see Figure 9).

Kawaha was the claimant to LCA 2043 (see Appendix A for more details) that included a fish pond that Klieger (1995:61) located on the southwest side of the mouth of Hālawā Stream just inland of the transit alignment and associates with the name "Pu'uone Kaulaloa" (see Figure 9).

Table 4. *Kuleana* Land Commission Awards for Hālawā Ahupua'a (adapted from Klieger 1995:63) (claims near the transit corridor are in bold)

LCA #	Claimant	General Location	Assoc. Place Names	Land Use
1983	Hapule (Kapule)	N. of Hālawā Stream, just <i>mauka</i> of corridor	Kawahanaenae Mo'ō'āina Kawahanaenae 'Ili	8 lo'i, 1 kula, house, 1 pu'uone (7 lo'i, 1 kula)
1996	Naea	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Kulina Mo'ō'āina, Kulina (Kulena) 'Ili	3 lo'i, house (<i>kula</i>)
2016	Makakane	N. of Hālawā Stream, km. <i>mauka</i> of corridor	(Kamalanai 'Ili)	2 lo'i, 1 kula
2042	Kauohilo	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Keaupuni Mo'ō'āina, Kula, Keaupuni 'Ili	3 lo'i (3 lo'i, 1 kula)
2043	Kawaha	N. of Hālawā Stream, km. <i>mauka</i> of corridor- but Loko Kunana claim was west of Hālawā Stream	Kunana Mo'ō'āina & Kaulailoa Pu'uone, Kunana (Kaunana) 'Ili	3 lo'i, 1 kula, 1 pond (4 lo'i, 1 kula, 1 pond)
2044	Kaupali	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Pamuku Mo'ō'āina, (Pamuku 'Ili)	4 lo'i (4 lo'i, 1 kula)
2047	Kekio	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Kaihuamo'o Mo'ō'āina & Kula, Kaehuamo'o or Kaihuamo'o 'Ili	1.5 lo'i, 1 kula, house
2048	Kauhalu	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Palahalaha Mo'ō'āina, Kunana 'Ili	4 lo'i, 1 kula, house (5 lo'i, 2 kula)
2055	Kahawai-olaa	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Kahaia Mo'ō'āina, Kunana (Kahaia) 'Ili	6 lo'i (6 lo'i, 2 kula)
2057	Keawe (1)	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Pamuku Mo'ō'āina, Kunana 'Ili	4 lo'i, 1 houselot (4 lo'i, 2 kula)
2059 n/a	Kaninauali'i	?	-	[dead in 1846]

LCA #	Claimant	General Location	Assoc. Place Names	Land Use
2091 n/a	Kelohanui	?	-	6+ <i>lo'i</i> , 1 <i>kula</i> , 1 houselot
2096	Kenui	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Kuaimano Mo'ō'āina, Kulina (Kuaimano) 'Ili	4 <i>lo'i</i> , 1 <i>kula</i> , house
2131	Kanihoali'i	N. of Hālawā Stream, just <i>mauka</i> of corridor & N. of Hālawā Stream, 1 km. <i>mauka</i>	Kalokoloa Pu'uone, Kamau 'Ili	1 <i>lo'i</i>, 2 <i>pu'uone</i>, 1 <i>kula</i>, 1 houselot
2137	Keawe (2)	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Kamo'oiki Mo'ō'āina & houselot, (Kamo'oiki) 'Ili	2 <i>lo'i</i> , 1 houselot (3 <i>lo'i</i> , 1 <i>kula</i>)
2139	Kinilau	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Hanakapua'a Mo'ō'āina, Kulina 'Ili	4 <i>lo'i</i> , 1 <i>kula</i> , house(3 <i>lo'i</i> , 1 <i>kula</i>)
2155	Pua'ali'ili'i	S. of Hālawā Stream, km. <i>mauka</i> of corridor	Kalo'iiki 'Ili	8.3 <i>lo'i</i> , 1 <i>kula</i> (9 <i>lo'i</i> , 1 <i>kula</i>)
2156	Opunui	S. of Hālawā Stream, km. <i>mauka</i> of corridor	Konohikihulehu Mo'ō'āina & Piomoewai Kula & houselot, Kalo'iiki 'Ili	3.3 <i>lo'i</i> , 1 <i>kula</i> 1 houselot (4 <i>lo'i</i> 1 houselot)
2157	Kanakaoaki	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Kulina 'Ili Kia'Ili	4 <i>lo'i</i> , 6 <i>lo'i</i> 1 <i>kula</i>
9330 n/a	Ka'auku'u	?	Muliwai (Makali'i) 'Ili	1 <i>kula</i> (entire <i>'ili</i>)
9331 n/a	Pulao	?	Muliwai Mo'ō'āina, Muliwai 'Ili	1 <i>lo'i</i>
9332	Kaheana	N. of Hālawā Stream, just <i>mauka</i> of corridor	Kaihuamo'o Mo'ō'āina, Kulina 'Ili	2 <i>lo'i</i> , 1 <i>kula</i> (1/2 <i>lo'i</i>)
9332B	Kealohanui	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Kumu'ula Mo'ō'āina, Kia (Kumu'ula) 'Ili	4 <i>lo'i</i>
9332C n/a	Kekoanui	?	Peahinaia 'Ili	1 <i>lo'i</i>

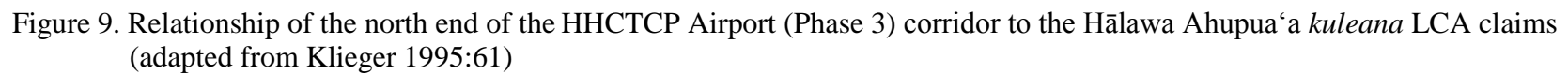




Figure 10. *Maka ‘āinana* Land Commission Awards near the Phase 3 archaeological study area

Oliver Holmes passed away in 1825. If he had indeed received Isaac Davis' Hālawā lands, they were probably returned to Liholiho (Kamehameha II) who redistributed them after Holmes' death. Holmes' children did not claim any Hālawā lands in the Māhele, although his son, George Holmes was awarded a piece of land in Honolulu. (LCA # 1045) It is this time period, from 1825 to 1848 that is most unclear. Subsequently, Kekūanaō'a ended up with Davis' Hālawā portion at the end of the Māhele and Grace Kama'iku'i Young Rooke (John Young's daughter) retained the John Young portion. Isaac Davis' portion of Hālawā passed from Kekūanaō'a to Ruth Ke'elekōlani and on to Bernice Pauahi Bishop. Upon Ruth's death, her lands become part of the Bishop Estate Trust.

At the end of the Māhele in 1848, the *ahupua'a* of Hālawā was awarded jointly to Grace Kama'iku'i Young Rooke and Kekūanaō'a. (LCA #s 8516B & 7712).

In 1852, Kekūanaō'a wrote a letter to the Minister of Interior requesting that a list of the *kapu* (forbidden) fish for Victoria Kamāmalu's lands on O'ahu be published in the newspaper. The *kapu* fish for Hālawā was the *'anae* or full-sized mullet. (Kekūanaō'a August 12, 1852)

In 1862, Mataio Kekūanaō'a and Kama'iku'i Rooke (John Young's daughter) leased a portion of *ahupua'a* of Hālawā to a Manuel Paiko of Honolulu for the purpose of cattle ranching. (B.C. Liber 9:174-179)

In 1866, Kama'iku'i willed to her sister, Fanny Na'ea, her interest in her portion of Hālawā.

In 1879, Fanny gave her interest of Hālawā to her daughter, Emma Kaleleonālani Na'ea Rooke, Queen of Kamehameha IV, by way of a deed which stated:

. . . the undivided ½ interest of and in to the Ahupua'a of Hālawā situate in 'Ewa, Island of Oahu, and more fully described in Royal Patent 6717 to Grace Kamaikui and being the same premises devised to me the said Fanny Young Kaleleonālani by the said Grace Kamikui. (Liber 59:285)

Fanny died one year later in 1880. A listing of *konohiki* lands on the island of O'ahu reflects the joint tenancy of Hālawā. Both Ruth Ke'elekōlani and Queen Emma are listed as owners. The document also lists the lands on O'ahu that abut the ocean, including the length and whether the land is a lagoon, reef or open sea. The length of the land abutting the sea at Hālawā is 8.52 miles and it is listed as being a reef and a lagoon. (*Interior Dept. Letters*, Document No. 15) Five years later, Queen Emma died in 1885, leaving no heirs. All of her lands became part of the Queen Emma legacy.

Throughout the years, there seems to have been dispute over the joint tenancy of Hālawā between the families of Kekūanaō'a and Young. In 1888 after a new survey was completed, Sanford B. Dole settled the matter by giving the northern portion of Hālawā to the Bishop Estate and the southern portion, including the current project area to the Queen Emma Trust (see Figure 11). From this time on, the boundaries have been distinct and the two portions recognized independently of each other.

3.1.3 Mid- to late-1800s

From early visitor descriptions of Hālawā and 'Ewa one can already begin to see that by the 1820's the demographics and landscape has changed considerably. Where once the area was

heavily populated and highly productive it begins by the 1820's to dwindle in population with fewer villages and fewer areas under cultivation.

By 1850, three years after the Māhele, the census for O'ahu was 25,440 which shows a decline of 14.5% over eighteen years. This population decline has been attributed to several factors including disease, high infant mortality and low fertility rates due to sexually transmitted diseases. (Schmitt 1973:15) Decline is also probably due to people moving away from rural areas closer to Kou (Honolulu) which was the center of trade and economic activity. On the island of O'ahu, a decrease in the population statistics is seen almost yearly until 1884 when the figures show an increase from then on into the 20th century. (Schmitt 1977:11) The increase is probably related in part to the growth of the sugar industry and the imported labor that was needed to work the plantations.

The first Chinese laborers arrived in Hawai'i in 1852 under contract to work on sugar plantations. As the demand for *kalo* declined and importation of Chinese laborers to the west coast of California and Hawai'i increased, a market for rice developed. *Lo'i* lands were ideal for growing rice and as these lands lay in disuse and became more available, the Chinese farmers snatched them up. Most of the land was “. . . near sea level--undrained areas at the mouths of streams: lowlands, which could be reclaimed without great expense.” (Coulter & Chun 1937:11) The Royal Hawaiian Agricultural Society encouraged rice as a new crop. The first rice harvest occurred in 1862. By the mid 1860's much of the *lo'i* on O'ahu had been transformed into rice fields. By 1892, there were approximately 117 acres of land planted in rice in the lowlands of Hālawā. (Coulter & Chun 1937:21)

In many *ahupua'a*, the lands which were not claimed by *kuleana* claimants, were leased out to entrepreneurs who started ranching and sugar plantations on a large scale. (Klieger 1995:71) Such was the case with Hālawā. In 1862 Kama'iku'i Rooke and Mataio Kekūanaō'a leased much of Hālawā (including the current project area) to a Manuel Paiko, a Portuguese rancher. (Klieger 1995:76) The lease document reads that the boundaries begin at “a small brook which forms the boundary between Hālawā and Moanalua” and continue “along the ridge of the mountain bordered on the north by 'Aiea and Kalauao, and on the west by Ko'olau, to the top of a peak called Aloheo; which forms the boundary between Moanalua and Hālawā.” The leased area consisted of approximately 10,000 acres. However, excluded from the lease was the “sea, the lagoons, the fish and all ponds, the enclosed *kalo* lands, all *kuleanas* awarded by the Land Commission, and so much of the *kula* lands adjoining the pond Ka Waiaho.” The lease was taken out for fifteen years with a rent of \$500 per year (BC, Liber 9:174-179). Manuel Paiko took on a business partner, James Dowsett of 'Ulupalakua Ranch fame. By 1870, their herd consisted of 1,400 head (BC, Liber 29:239). James Dowsett and another partner, J. R. Williams tried unsuccessfully to raise sugar. Due to lack of a railroad to haul cane and the mill burning down three times, they gave up trying to raise sugar in 1875. Altogether, about 100 acres had been planted in cane (Condé and Best 1973:327). Maps from the late 1800s (see Figure 11) indicate the current project area was relatively undeveloped and was probably in cattle pasture leased by Manuel Paiko. The development of the Oahu Railway along the coast of Hālawā (see Figure 11) in the 1890s did open up the Hālawā lands to commercial sugarcane production.



Figure 11. 1899 Taylor Government map showing project area

3.1.4 Modern Land Use

At the end of the nineteenth century, the Honolulu Sugar Company (later Honolulu Plantation Company) began leasing portions of Moanalua for sugar cane cultivation. By the mid-1930s the company had more than 23 thousand acres of land leased having expanded significantly up the coastal plain to the north inland of the East Loch of Pearl Harbor (Figure 12 and see also Figure 15). Sugar cane planting extended quite far seaward but there is reason to believe the coastal floodplain of Hālawā Stream was in rice production circa 1900 (see Figure 12). The extent of sugar cane cultivation in the area just south of Hālawā Stream is not altogether clear but a 1919 map (Figure 13) shows a sugar cultivation symbol (faintly) on the southwest slope of Makalapa Crater near the present transit alignment study area. A sugar plantation community developed at Puuloa Camp near Puuloa Station on the OR&L alignment on the Hālawā/Moanalua *ahupua'a* boundary approximately 400 m west of the Transit Corridor) in the early 1900s (see Figure 12 & Figure 14). Another new Hālawā Ahupua'a community called Watertown developed adjacent to the east side of the Pearl Harbor entrance (Figure 16).

The prior series of historic maps show the development of Honolulu plantation in the vicinity of the project area. The Donn 1906 map of Oahu (see Figure 12) appears to show the Honolulu Plantation fields including the majority of the northwest and central portions of the present study area. No other development is indicated in the vicinity (other than the OR&L railroad and Puuloa Camp). The new OR&L railroad runs very close to the eastern margin of Pearl Harbor (seawards of the Transit alignment for most of its route across Hālawā Ahupua'a. The Donn 1906 map of Oahu (see Figure 12) also shows an area of wetland cultivation (rice and taro) near the project corridor: at the bottom lands near the mouth of Hālawā Stream (and another just west of the proposed Lagoon Drive Station in Moanalua Ahupua'a).

The 1919 Fire Control quad map (Figure 13), 1928 US Geological Survey map (Figure 14) and Honolulu Plantation map (Figure 15) show a *makai/mauka* trending Honolulu Plantation Company railroad extending inland just south of Makalapa Crater (crossing the transit alignment just south of the Pearl Harbor Naval Base Station) but otherwise there is little development shown in the vicinity of the transit corridor in Hālawā Ahupua'a.

The Honolulu Plantation map (see Figure 15) and the Composite Site Map prepared by Anderson and Bouthillier (1996, see Figure 16) corroborates the author's understanding that most of the project corridor in Hālawā Ahupua'a was in sugar cane fields for many decades and that the cultural features in the vicinity (including Watertown (Hālawā Ahupua'a), Puuloa Camp (on the Hālawā/Moanalua Ahupua'a boundary) and Lelepaua Pond, Ka'ihikapu Pond and the 1930s salt works (Moanalua Ahupua'a) were well to the south.

Pearl Harbor had been the focus of American interests in the Hawaiian Islands for many decades prior to annexation. Following annexation in 1898, and with an eye on the need to establish a coaling station for American warships travelling to the Philippines and beyond, improvement at the Pearl Harbor entrance was a major concern. Some 429 acres were purchased from Queen Emma Kaleleonalani for \$28,285 which was developed as Fort Upton (changed to Fort Kamehameha in 1909). An additional 400 acres were purchased from the Damons in 1911. In 1908 the Navy undertook the dredging of the Pearl Harbor channel that was blocked by a shallow sand bar that had greatly restricted earlier development efforts. Much of the fill from this

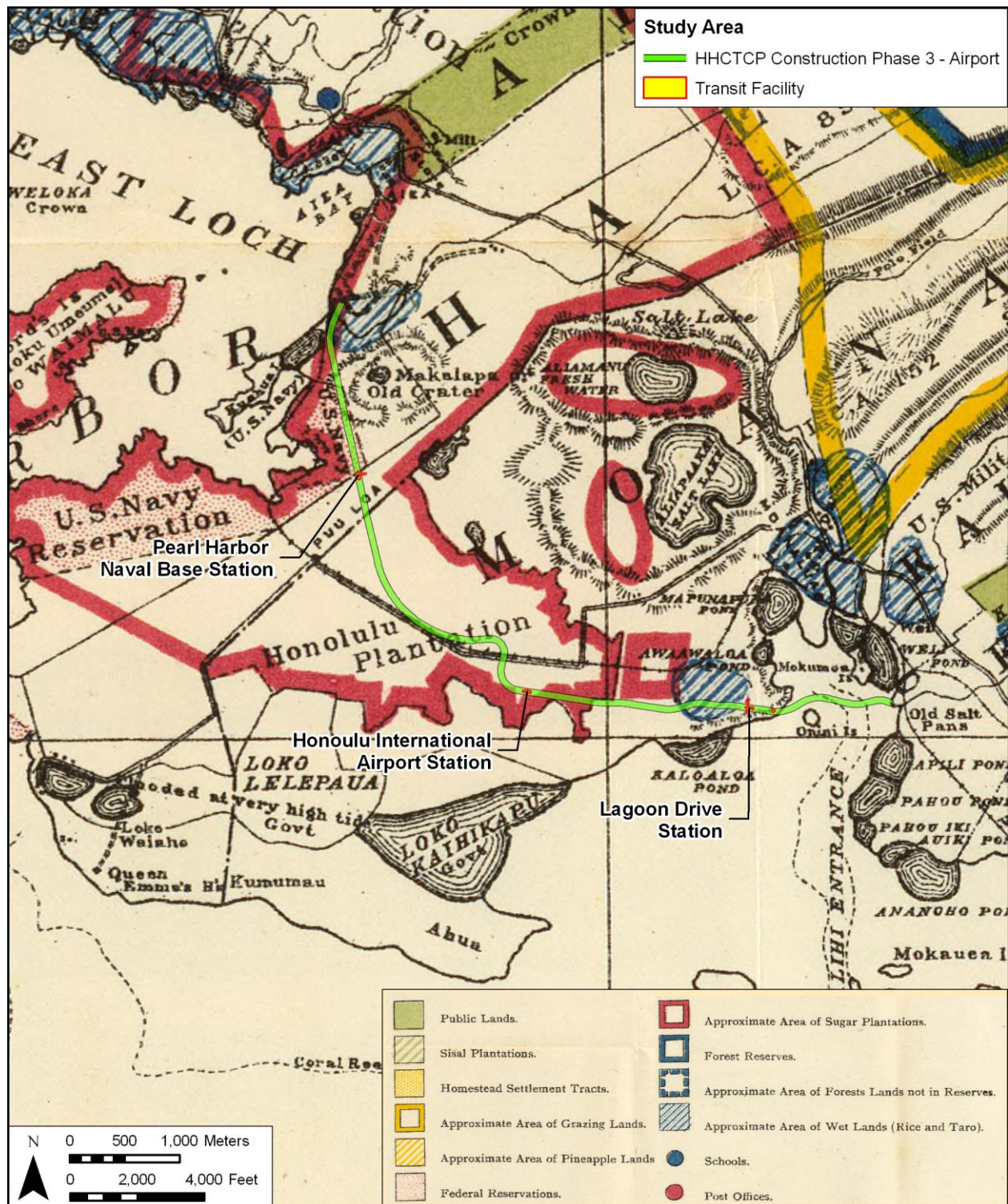


Figure 12. Portion of John M. Donn 1906 Map of Oahu (RM# 2374)

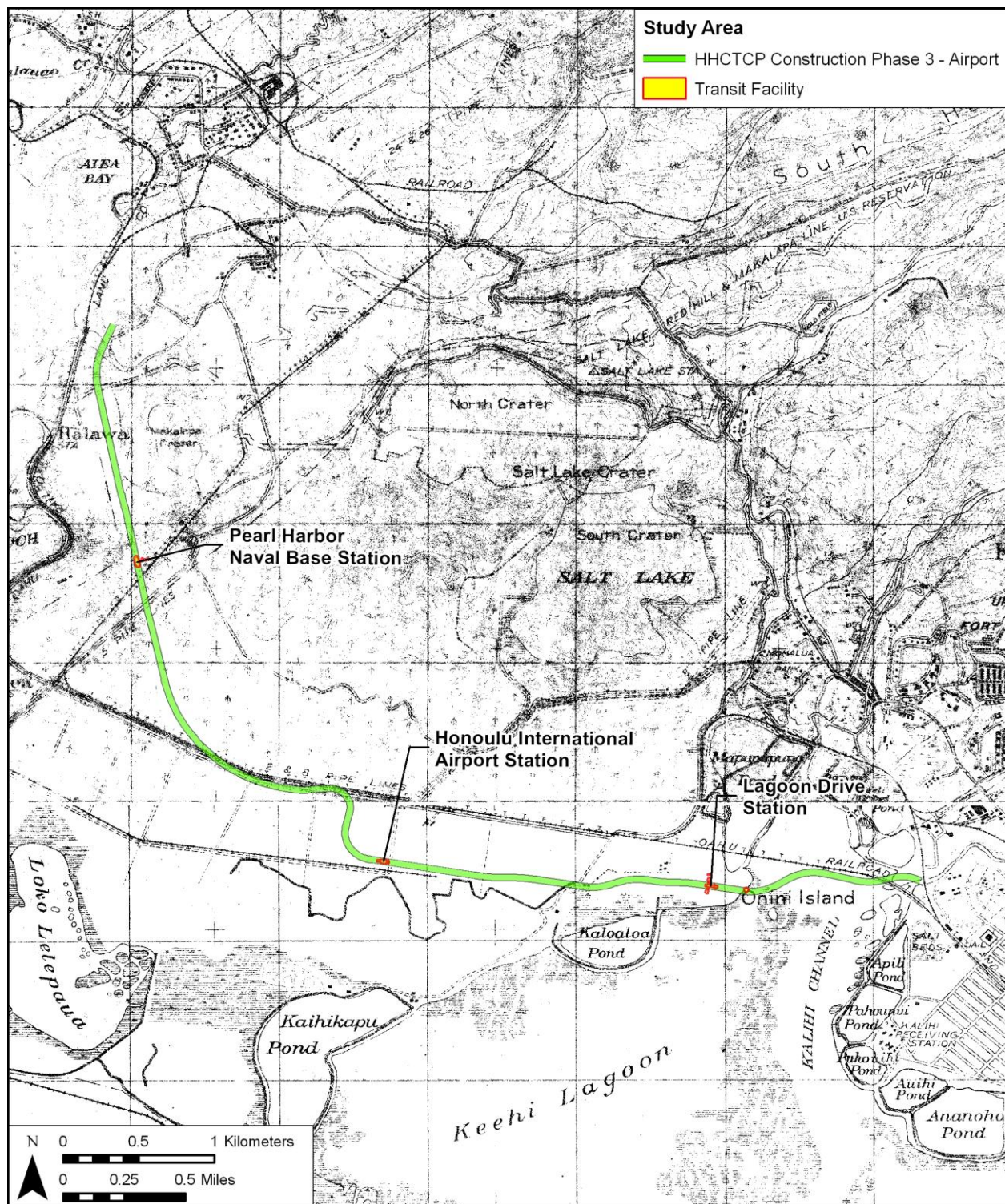


Figure 13. 1919 Fire Control Pearl Harbor and Honolulu quad maps showing location of project area

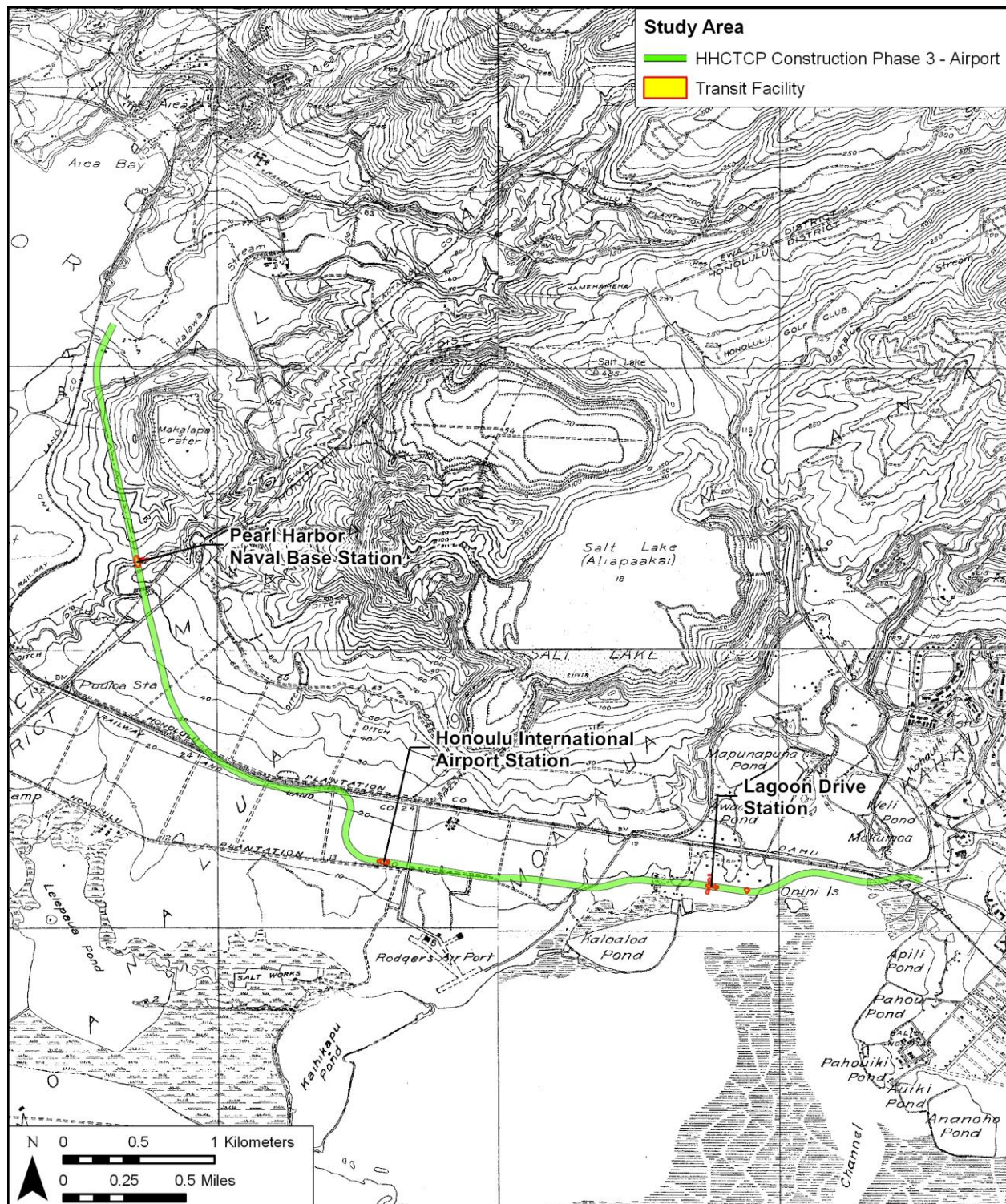


Figure 14. 1928/1930 U. S. Geological Survey Waipahu quad map showing project area

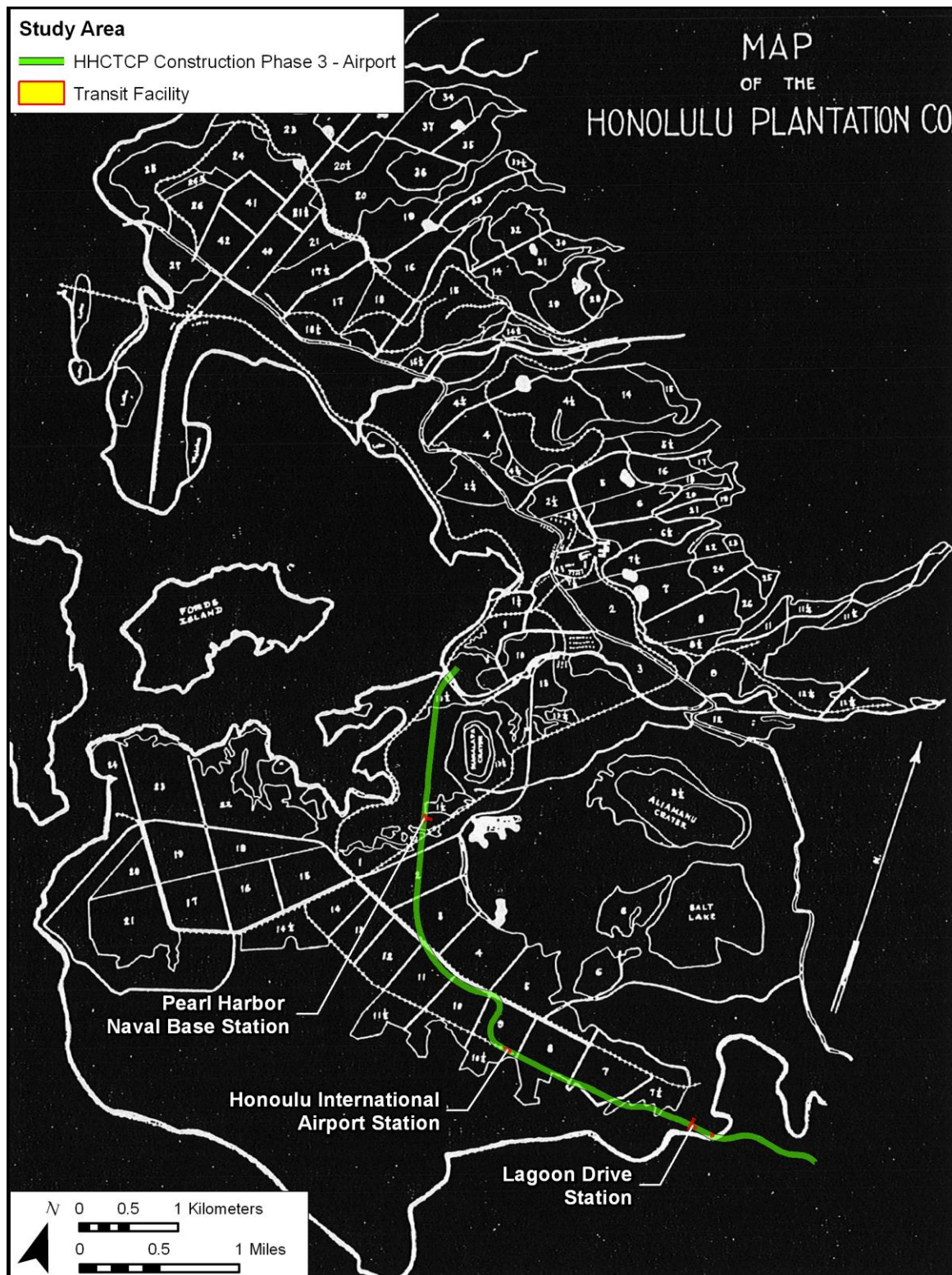


Figure 15. Map of the Honolulu Plantation c. 1935 showing fields near project area

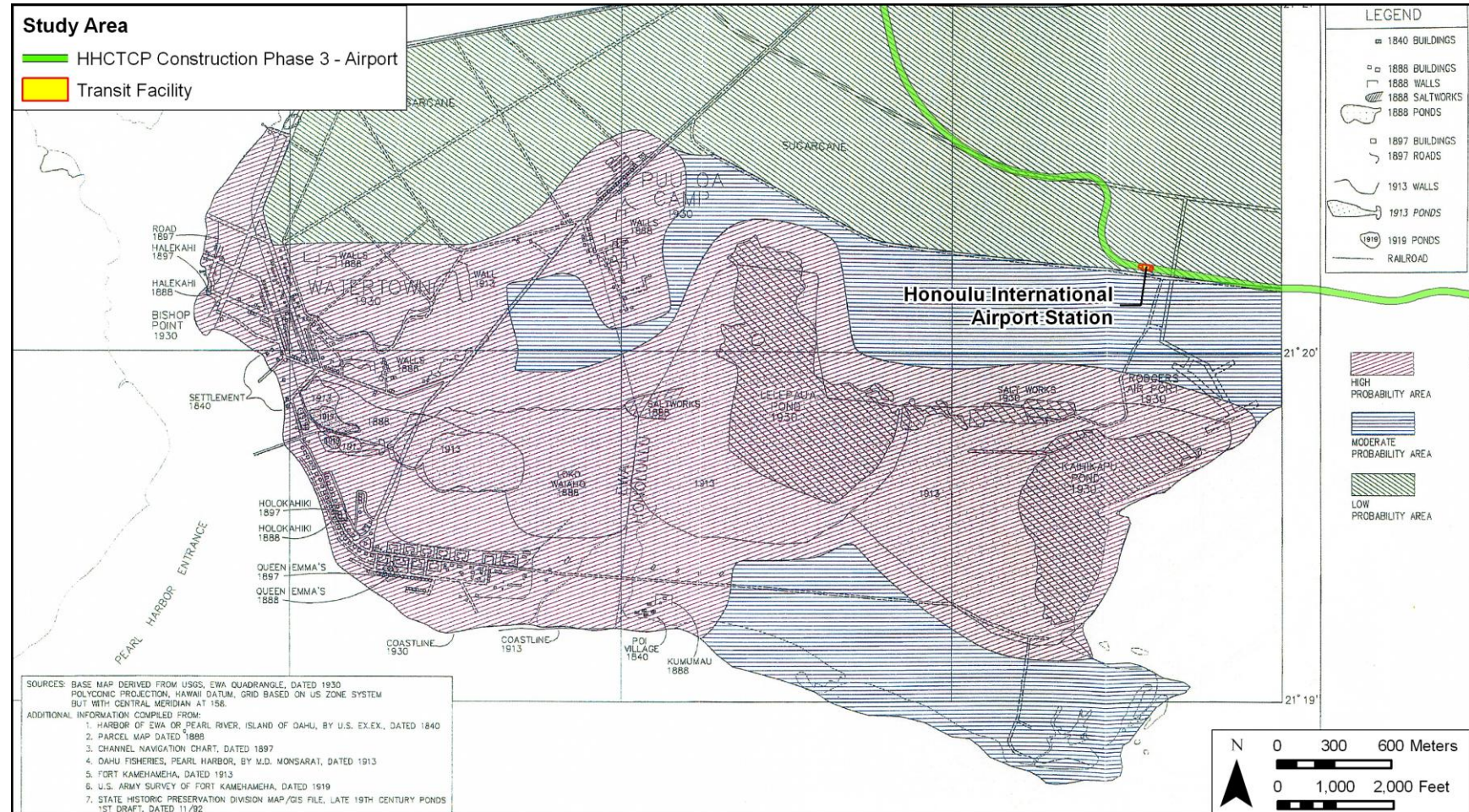


Figure 16. Composite Site Map 1840-1930 (adapted from Anderson and Bouthillier 1996:29) showing relationship of the project corridor to the cultural resources of the greater Hickam area including Watertown (Hālawa Ahupua'a), Puuloa Camp (on the Hālawa/Moanalua Ahupua'a boundary), Waiaho Pond, Lelepaua Pond, Ka'ihikapu Pond, the 1930s salt works (all in Moanalua Ahupua'a) and Areas of Probability for Archaeological and Historical Resources

and later dredging efforts was used to fill in low-lying lands. Five separate coastal defense batteries were built (including Battery Selfridge and Battery Hawkins). The Fort Kamehameha post housed Hawaii's first aviation unit in 1917/1918. The population of the base remained about 1800 until World War II.

In the 1930s an Army Air Corps airfield was established to the west of Rodgers Airport. The Hickam Air Force Base web site offers the following brief history of this military base's early development:

In 1934, the Army Air Corps saw the need for another airfield in Hawaii and assigned the Quartermaster Corps the job of constructing a modern airdrome from tangled brush and sugar cane fields adjacent to Pearl Harbor on the island of Oahu. The site consisted of 2,200 acres of ancient coral reef, covered by a thin layer of soil, located between Oahu's Waianae and Koolau mountain ranges, with the Pearl Harbor channel and naval reservation marking its western and northern boundaries, John Rodgers Airport to the east, and Fort Kamehameha on the south. The new airfield was dedicated May 31, 1935 and named in honor of Lt. Col. Horace Meek Hickam, a distinguished aviation pioneer killed Nov. 5, 1934, at Fort Crockett in Galveston, Texas.

Hickam AFB now consists of 2,850 acres of land and facilities valued at more than \$444 million.

The 1943 War Department quad map (Figure 17) shows the new (present day) Kamehameha Highway with substantial residential development recently constructed on both sides of the Highway within Hālawa Ahupua'a. The 1953 Army Map Service map (Figure 18) shows the western portion of the Phase 3 Transit alignment in Hālawa Ahupua'a much as it is today.

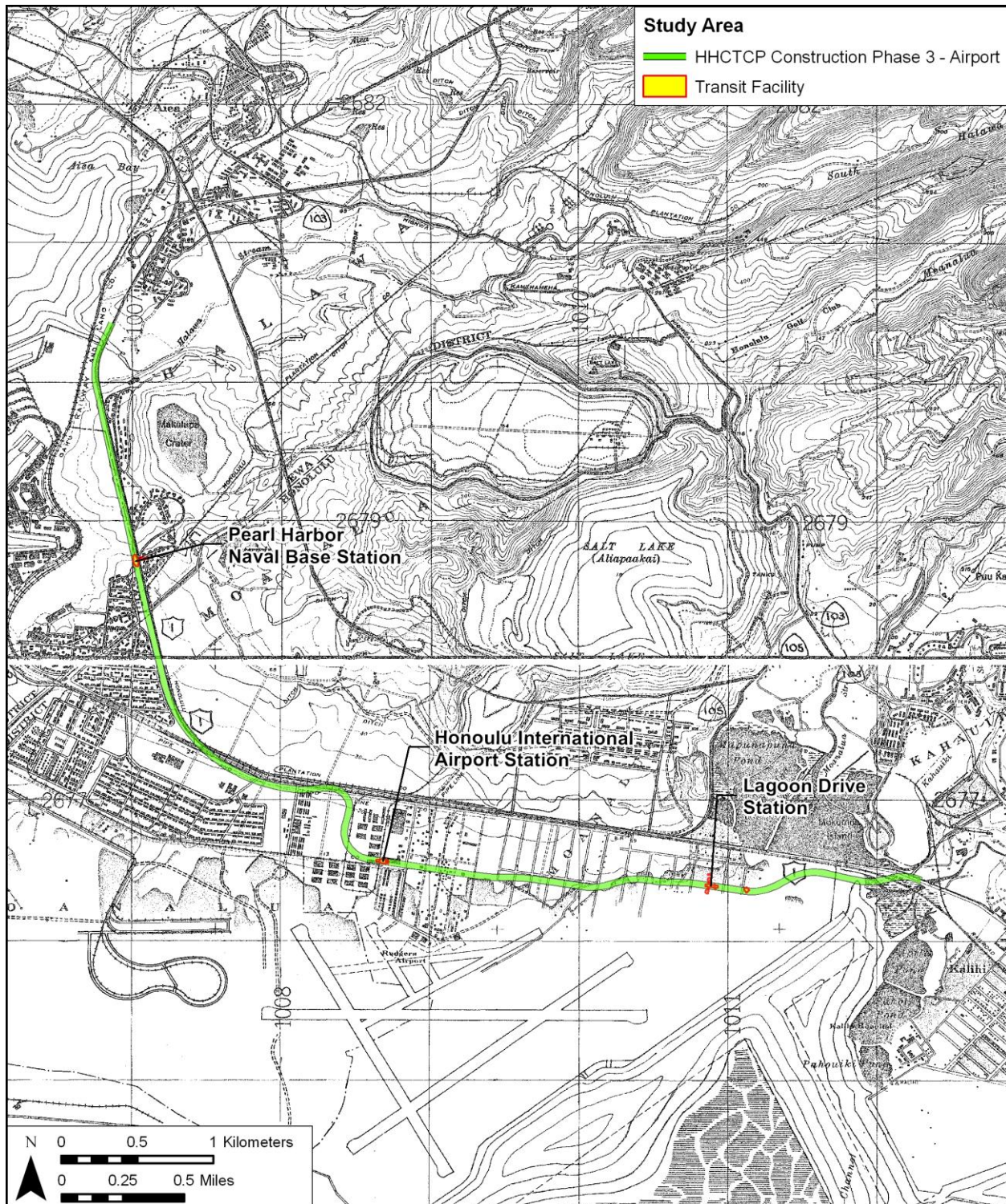


Figure 17. 1943 War Department Aiea quad map showing project area

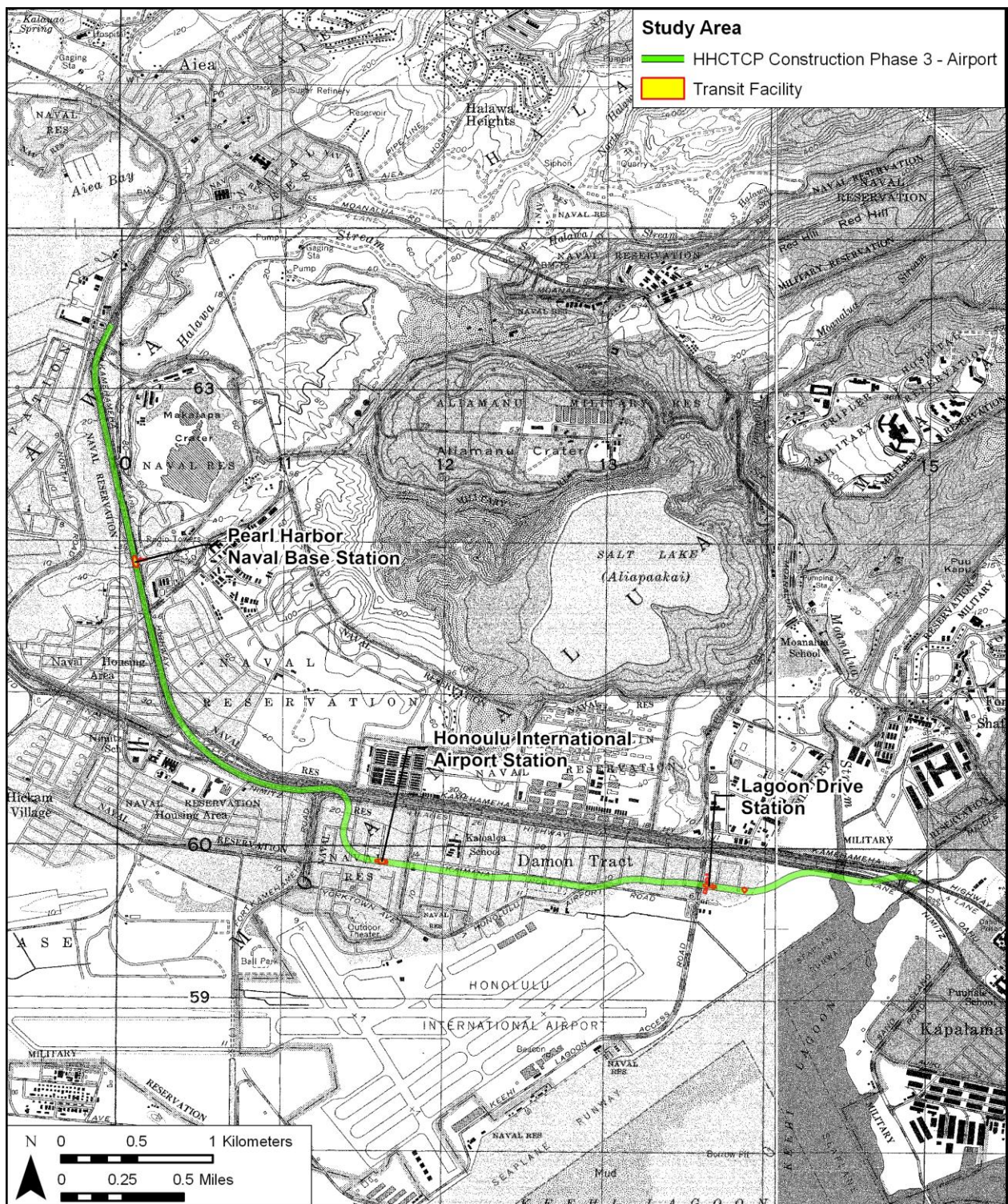


Figure 18. 1953 Army Map Service quad map showing project area

3.2 Moanalua Ahupua'a

3.2.1 Early Historic Period

Records of European visitors to Moanalua during the first quarter of the nineteenth century provide clear evidence that, by the time of western contact in the late eighteenth century, a sizeable population of Hawaiians existed within Moanalua Ahupua'a. Settlement concentrated around Moanalua Stream on the east side of the *ahupua'a*, which provided a fertile living environment that fully amplified the resources presented by the Moanalua terrain.

Those possibilities included an abundance of plant life that provided sustenance and building materials. A botanical survey (Bishop and Herbst 1970) has recorded 197 endemic and indigenous plant species in Moanalua. Further, the physical characteristics of the *ahupua'a* provided an especially rich environment for the Hawaiians to build upon. The land form created by streams deep-cutting into the Ko'olau volcano and the embayment created by offshore reefs produced a broad zone of rich alluvial lands bordering a shallow lagoonal environment. In the alluvium, the Hawaiians of Moanalua created an irrigated system of pond-field taro gardens fringed with bananas and sugar cane growing on the embankments that outlined the fields. And the stream water that supported the field system, continuing on into the shallow bay, distributed organic nutrients that would have attracted large fish populations to the bay. This established the appropriate environment for the construction by the Hawaiians of fishponds to exploit and control these resources.

The navigator Otto von Kotzebue, in the employ of the Russian navy, visited Honolulu in November and December 1816. Kotzebue decided "to undertake a little excursion on foot [in order to survey the coast] to the river called Pearl River by the English, lying half a day's journey to the west of Gana-Rura [Honolulu]." Kotzebue and two shipmates set out on December 8, 1816:

On our way, we met now sugar plantations, now taro fields, now scattered huts; and so, without noticing it, we covered the five miles to the large village of Mauna-Roa [i.e. Moanalua - the Russians had misheard the name and thought it the same as Mauna Loa on the island of Hawai'i], situated in a delightful valley on a mountain slope. From here, there winds to the sea a fast-flowing river of the same name. It is visible at a great distance and wanders through the mountains and cliffs in the most picturesque fashion. In front of the village, consisting of pretty little reed huts, one encounters two groves, one of coconut palms, the other of breadfruit. We passed through these little groves, to take a rest on the hill lying immediately behind. (in Barratt 1988:232)

On the hill where Kotzebue and his companions stopped, "a general view of Honolulu Harbour opened up to us. Our compass was set up and I took a number of angles with my sextant" (Barratt 1988:232). The following year, 1817, Kotzebue drew a map of the south coast of O'ahu. The map (see Figure 8) identifies Salt Lake ("Озеро Соленое"), Mauna-Roa (Moanalua) River ("Р. Мона-роа"), and fish ponds ("Рыбные Пруды") along the shoreline of Moanalua. The map also shows a profusion of taro *lo'i* (irrigated fields) in the lowlands of Moanalua below Āliapa'akai (Salt Lake), spreading out from Moanalua Stream and stretching

back from the fishponds at what was then the shore. The Kotzebue map is quite early (reflecting the area in 1816) and should be understood more as a detailed sketch than as a surveyed map.

Āliapaʻakai itself would have provided a valuable resource to the Hawaiians of Moanalua before and after western contact. The missionary William Ellis presents this description of Salt Lake in the 1820's:

About six miles to the west of Honoruru, and nearly as far from the village of Eva, on the Pearl river, there is a singular natural curiosity - a small circular lake, situated at a short distance from the sea shore, so impregnated with salt, that twice in the year the natives take out between two and three hundred barrels of fine clear, hard, crystalized salt: this lake is not only an interesting natural curiosity, but an important appendage to the island. It belongs to the king, and is not only useful in curing large quantities of fish, but furnishes a valuable article of commerce; quantities of it having been sent for sale to Kamtschatka, and used in curing seal skins at the different islands to which the natives have sent their vessels for that purpose, or sold in the islands to Russian vessels, from the settlements on the north-west coast of America. (Ellis 1969: 18-19)

The trade in salt dwindled by the mid-nineteenth century and, as a visitor of that time noted, the salt in the lake had "almost wholly disappeared" [Bates 1854:102].)

The grove of coconut palms at Moanalua mentioned by Kotzebue was described in more detail by a visitor of the 1830's:

But to return to the little valley, about three miles from Honolulu on the road to Ewa over. . . On looking down, you behold a large grove of cocoanut trees, some of which give evidence of having been blown upon with no ordinary breath; appearing to have been nearly prostrated when about twenty feet high, they again shot up in a perpendicular direction and now present the curious phenomenon of living trees, the upper half of whose trunks are almost at right angles from the lower. It is a little remarkable that the surrounding trees on every side are perfectly straight. (Hall 1839:97)

Maps of Moanalua produced during the second half of the nineteenth century - i.e. before substantial alterations to the landscape - display the profusion that had been developed by the Hawaiians of the "large village" (Kotzebue) of Moanalua by the time of western contact. A map (ca. 1890's) by C.J. Lyons and M.D. Monsarrat (Figure 19) shows the expanse of fishponds that extended along the shores of Moanalua and the adjacent *ahupuaʻa* of Kahauiki and Kalihi.

It should be noted, however, that the present Transit alignment does not appear to cross any of these fishponds (see Figure 19 and Figure 20). Furthermore, the present transit alignment runs over modern fill land in the vicinity of the mouth of Moanalua Stream. While the natural mouth of Moanalua Stream was a rich area of Hawaiian settlement, that area was actually 300 m inland of the present transit alignment due to the very substantial infilling and land creation within what was traditionally coastal shallows.

In 1826, ten years after Kotzebue's had observed the "large village" of Moanalua, Hiram Paulding, a naval officer following the same route from Honolulu to Pearl River would record a different scene:

...the country was thinly inhabited. We met with no considerable village or rich valley. (Paulding 1831:205)

The diminished population within Moanalua that Paulding observed likely reflects changes taking place throughout the Hawaiian Islands during the years following western contact: The population of Moanalua - at the time of the first large-scale census by American missionaries in 1835-36 - totaled 625 and included: 234 adult females, 252 adult males, 48 female children, and 91 male children (Schmitt 1973:19). These figures reflect, tragically, the decimation of the native population by western-introduced diseases and the upsetting of traditional social patterns by the influx of western commercial ideals.

The work of Anderson and Bouthillier (1996) documents two coastal communities in the Hālawā-Moanalua coastal plain, an unnamed settlement (annotated as “Settlement 1840”) just southwest of the area that would become known as Watertown in the Pearl Harbor entrance and another community known as “Poi Village” on the coast southwest of the current study area (Figure 7). These are assumed to have been traditional Hawaiian fishing villages. It seems probable settlement closer to the present project area was effectively prevented by the low-lying marshy ground in the vicinity.

3.2.2 Fishponds of Moanalua

The fishponds along the shoreline of Moanalua - *loko kuapā* that were controlled by the *aliʻi* - are another resource that must have greatly increased the productivity of the area. The fishponds of the Hālawā-Moanalua Plain are summarized in the following table (Table 5).

Loko Waiaho and Loko Keʻoki were located in the western portion of the Hickam AFB lands while Loko Lelepaua and Loko Kaʻihikapu were approximately 1.3 kilometers southwest and southeast (respectively) of the present project area.

Apple and Kikuchi (1972:2) discuss the impact that such fishponds would have had on the general population of an area:

Accessibility to these ponds and their products was limited to the elite minority of the native population - the chiefs and priests. Prehistoric ponds and pond products appear to have been taboo to the vast majority of Hawaiians and to have yielded them no direct benefit. However, indirect public benefit came from ownership by the chiefs of exclusive food sources. Royal fishponds...insured less demand on the commoners' food production resources. Every fish taken from a royal fishpond left its counterpart in the natural habitat available to lesser chiefs and commoners.

The fishponds of Moanalua, although not necessarily representing beneficial resources for the commoners, can be seen as evidence of a thriving chiefly class in the *ahupuaʻa*.

3.2.3 The Māhele

At the Māhele in 1848 the *ahupuaʻa* of Moanalua was granted to Lot Kamehameha (later Kamehameha V) with fee simple title to native tenants. Subsequently Land Commission Awards were granted to 101 commoners for parcels they were actively cultivating or resident upon. The

Table 5. Fishponds (*Loko*) of the Hālawā-Moanalua Plain

Name	Source	Site Number	Area (acres)	Construction Features	Relationship to Transit Alignment
Mapunapuna (Moanalua)	McAllister (1933:93)	50-80-13-78	40	Wall mostly of coral 1600 feet long, 10 feet wide, 1 foot above water on inside, 2.5 feet high outside, 4 <i>mākāhā</i>	600 m inland of Lagoon Drive Station (see Figure 20)
Keawamalia (Moanalua)	McAllister (1933:93)	50-80-13-78	"small"	Surrounded by earth embankments	600 m + inland of Lagoon Drive Station (adjoins Mapunapuna Pond on <i>mauka</i> side)
Awawaloa (Moanalua)	McAllister (1933:93)	50-80-13-79	8.8	Coral rock wall 900 feet long, 2 <i>mākāhā</i>	400 m inland of Lagoon Drive Station (see Figure 20)
Kaloaloa (Kailoloa) (Moanalua)	McAllister (1933:93)	50-80-13-80	36	Semicircular wall of coral 2700 feet long, 6 feet wide, 3 feet high, 3 <i>mākāhā</i>	200 m S of Transit alignment west of Lagoon Drive Station (see Figure 20)
Ka'ihikapu (Moanalua)	McAllister (1933:93)	50-80-13-81	258	Coral wall 4500 feet long, 3-8 feet in width, 3 feet high with 3 <i>mākāhā</i>	800 m S of Airport Station (see Figure 19)
Lelepaua (Moanalua)		50-80-13-82	332	Earthen and coral embankments 10 feet or more wide	1000 m SE of Transit alignment west of Airport Station (see Figure 19)
Āliapa'akai (Moanalua)	McAllister (1933:93-94)	50-80-13-83		Natural "Salt Lake"	1400 m N of Transit alignment Lagoon Drive Station (see Figure 19)
Waiaho (Moanalua)	McAllister (1933:101)	50-80-13-94	32	Coral and sand walls and 5 <i>mākāhā</i>	2 km SW of the Transit alignment (see Figure 16)
Ke'oki (Hālawā)	McAllister (1933:101)	50-80-13-95	-	Narrow wall of coral, rock and sand	

Name	Source	Site Number	Area (acres)	Construction Features	Relationship to Transit Alignment
Papiolua (Hālawā)	McAllister (1933:101)	50-80-13-96	1	wall 150 feet long, 4 feet wide & high, no <i>mākāhā</i>	
Loko-a-Manō (Loko Amana) (Hālawā)	McAllister (1933:102)	50-80-13-97	-	-	
Loko Pōhaku (Hālawā)	McAllister (1933:102)	50-80-13-98	2.5	-	
Wailolokai (Hālawā)	McAllister (1933:102)	50-80-13-99	Very small	-	
Wailolowai (Hālawā)	McAllister (1933:102)	50-80-13-100	-	-	
Makalapa Crater (Hālawā)	McAllister (1933:102)	50-80-13-101	-	Lake within crater	300 m E of Transit alignment N of Pearl Harbor Naval Base Station
Loko Kunana (Hālawā)	McAllister (1933:102)	50-80-13-102	25	Kuahua Island forms one side, walls from shore to island are 1800 feet and 1950 feet long, approx. 5 feet wide and 3 feet high	Immediately inland of Transit alignment on south side of Hālawā Stream (see Figure 9)
Loko Muliwai (Hālawā)	McAllister (1933:102)	50-80-13-102	4	Wall 500 feet long with 1 <i>mākāhā</i>	
Wai Alua (Hālawā)	Klieger 1995:61	-		N side of Hālawā Stream	120 m inland at N side of Hālawā Stream (see Figure 9)
Wai Kalaua (Hālawā)	Klieger 1995:61	-		N side of Hālawā Stream	180 m inland at N side of Hālawā Stream (see Figure 9)

Name	Source	Site Number	Area (acres)	Construction Features	Relationship to Transit Alignment
Wai Kuohoi (Hālawā)	Klieger 1995:61	-		S side of Hālawā Stream	700 m inland at S side of Hālawā Stream (see Figure 9)
Wai Kai (Hālawā)	Klieger 1995:61	-		S side of Hālawā Stream	800 m inland at S side of Hālawā Stream (see Figure 9)
Ahua Pond	1920 Monsarrat map				150 m inland of Lagoon Drive Station (see Figure 20)
Kaikikapu Pond	1920 Monsarrat map				400 m inland E of Lagoon Drive Station (see Figure 20)

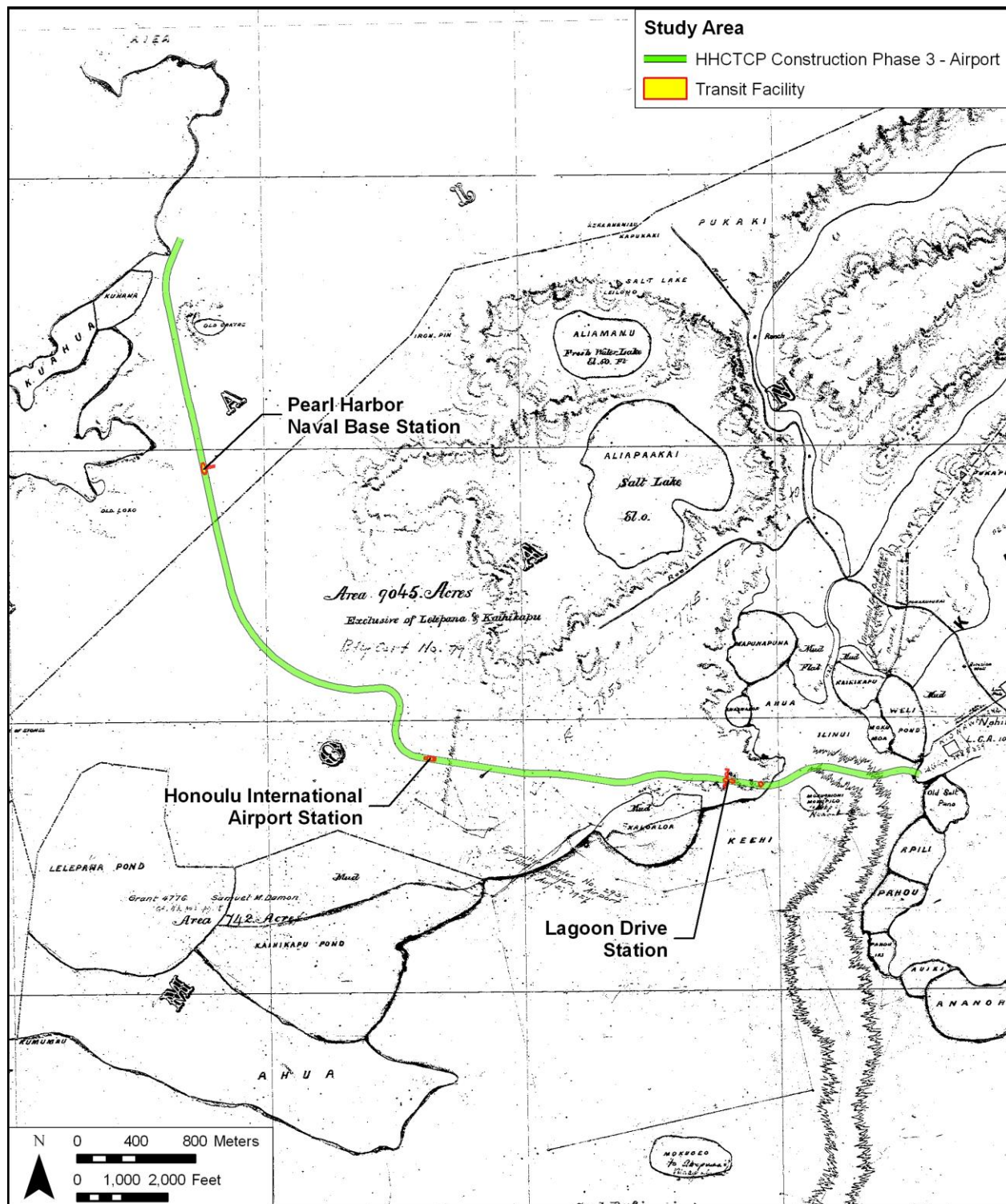


Figure 19. 1890 Monsarrat/ Lyons Moanalua Kahauiki map (Registered Map 1511) showing project route (Note: the open water traversed east of the Lagoon Drive Station)

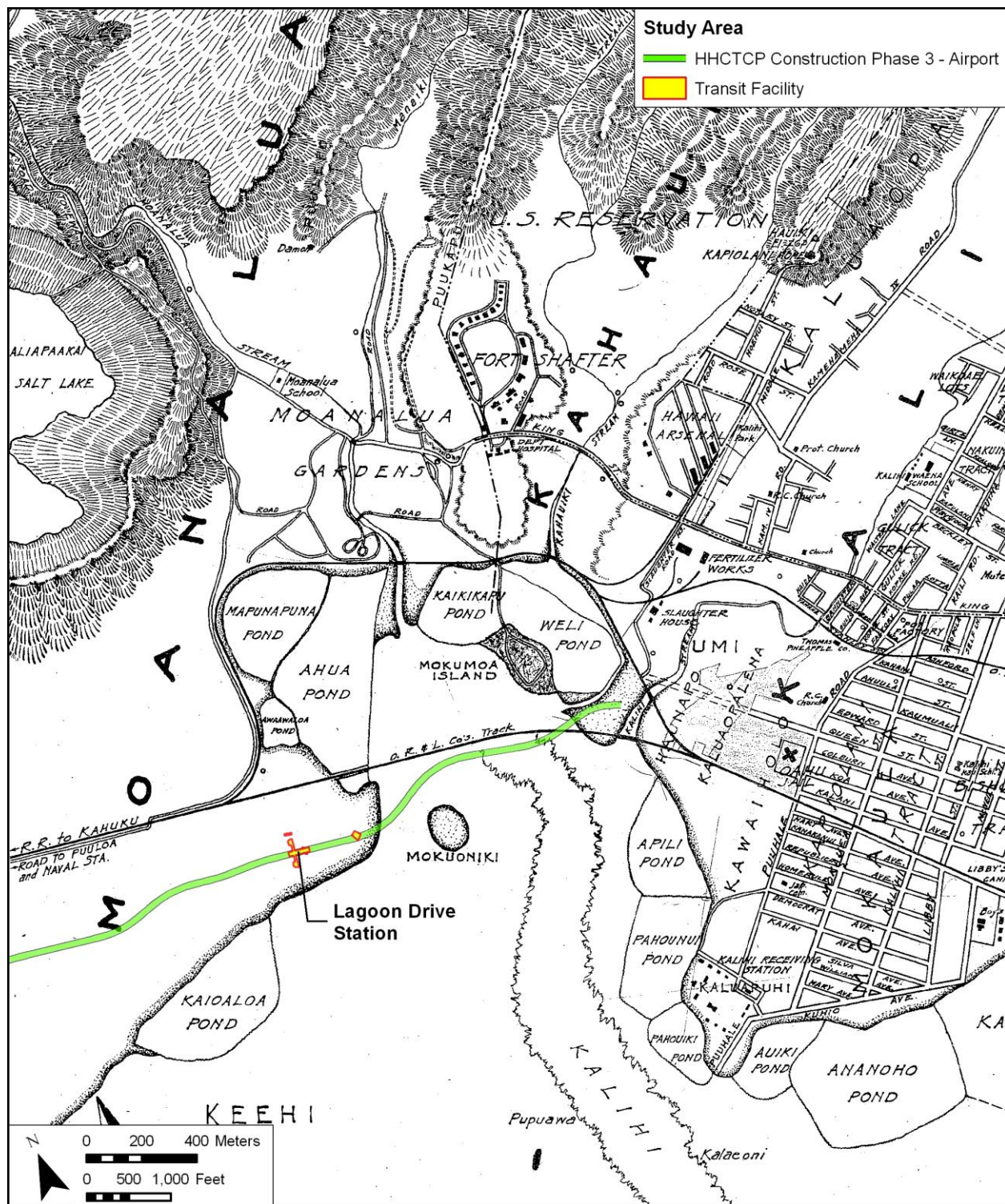


Figure 20. 1920 Monsarrat Honolulu District Map (Note: the open water traversed east of the Lagoon Drive Station)

Land Commission Awards were heavily concentrated well *mauka* of the present project area in the “bottom lands” along Moanalua Stream and the two tributaries (Figure 21). No commoner land commission awards are known in the vicinity of the present project area (although George Beckley’s claim for LCA818 is not far removed, see Figure 10 and Appendix A). It was common for the aristocracy and/or their overseers (*konohiki*) to retain fishponds and unique cultural resources such as the coastline at the mouth of Pearl Harbor.

3.2.4 Mid- to late-1800s

Upon the death of King Kamehameha V in 1872, Princess Ruth Ke‘elikōlani received the *ahupua‘a*. When Princess Ruth died in 1883, the land was left to Princess Bernice Pauahi Bishop. A codicil of Princess Bernice's will granted Moanalua to Samuel M. Damon upon her death in 1884. Damon and his heirs began buying up the *kuleana* lands of the *ahupua‘a*. Damon kept much of Moanalua in pasture, with portions leased to rice, sugar and banana growers.

In the late 1800s there were a number of developments in the Moanalua coastal plain that were not well documented (see Anderson and Bouthillier 1996 for discussion). Starting from the east side of the Pearl Harbor entrance and moving to the east these included the coastal communities of Holokahi, Queen Emma’s property, Poi Village and Kumumau (see Figure 16). These were all on the coast and none of these were close to the present project area

The 1890 Monsarrat/Lyons map (Figure 19) shows no development in the project area other than fishponds.

3.2.5 1900s

At the end of the nineteenth century, the Honolulu Sugar Company (later Honolulu Plantation Company) began leasing portions of Moanalua for sugar cane cultivation. Sugar cane planting extended seaward into the present study area (see Figure 15). It appears that a Honolulu Plantation Company railroad line crossed east/west *makai* of the present project area by 1906 and the OR&L ran east/west just to the north (at the Nimitz alignment) (see Figure 9). A sugar plantation community developed at Puuloa Camp circa 1930 and another community called Watertown developed adjacent to the east side of the Pearl Harbor entrance. A map of the Honolulu Plantation Company lands circa 1935 (see Figure 15) indicates that the project area was in commercial sugar cane fields no. 2, 3, and 7 to 11.

The Anderson and Bouthillier (1996) study notes the presence of a salt works between Lelepaua Pond and Ka‘ihikapu Pond circa 1930 (see Figure 16 and also Figure 14). Rodgers Airport (which was to become Honolulu International Airport) is understood to have been begun in 1930 (see Figure 14). Pearl Harbor had been the focus of American interests in the Hawaiian Islands for many decades prior to annexation. Following annexation in 1898 and with an eye on the need to establish a coaling station for American warships running to the Philippines and beyond improvements at the Pearl Harbor entrance was a major concern. Some 429 acres were purchased from Queen Emma Kaleleonalani for \$28,285 which was developed as Fort Upton (changed to Fort Kamehameha in 1909). An additional 400 acres were purchased from the Damons in 1911. In 1908 the Navy undertook the dredging of the Pearl Harbor channel that was blocked by a shallow sand bar that had greatly restricted earlier development efforts. Much of the

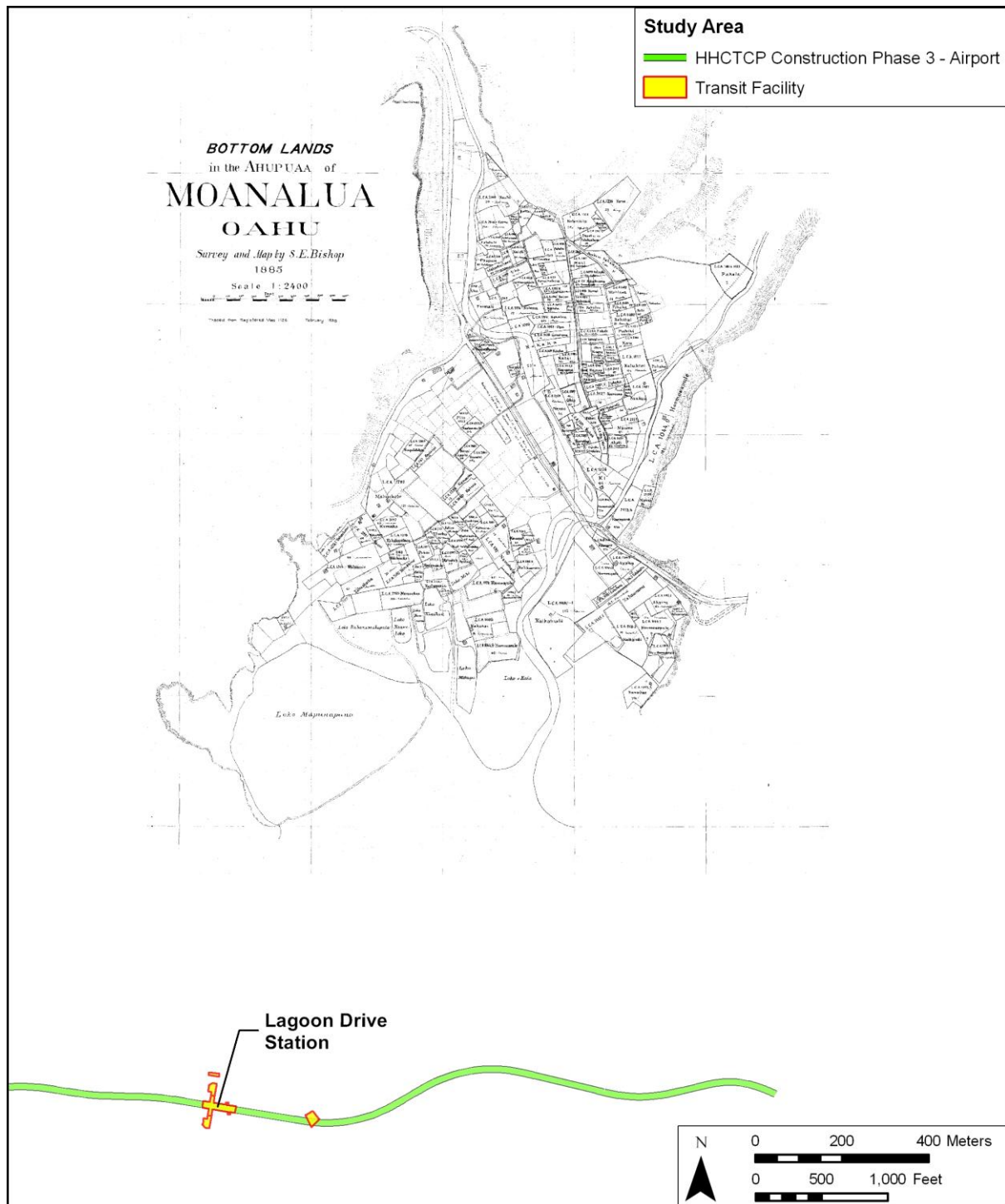


Figure 21. 1885 Map of the Bottom Lands in the Ahupua‘a of Moanalua by S.E. Bishop, showing the extensive network of *lo ‘i* and Land Commission Awards (LCA) in lower Moanalua in relation to the present project corridor (which is built on fill lands well seaward of the former Moanalua Stream mouth).

fill from this and later dredging efforts was used to fill in low-lying lands. Five separate coastal defense batteries were built (including Battery Selfridge and Battery Hawkins). The Fort Kamehameha post housed Hawaii's first aviation unit in 1917/1918. The population of the base remained about 1800 until World War II.

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Hickam AFB now consists of 2,850 acres of land and facilities valued at more than \$444 million.

The very substantial fill activities and airport construction particularly associated with 1942/1943 are readily apparent in a comparison of the 1930 (see Figure 14) and 1943 (see Figure 17) maps. The vicinity of the project lands have been rapidly developed with roads and elongated warehouse-like buildings.

The 1953 Army map service quad map (see Figure 18) shows further urban and light industrial development in the project vicinity largely associated with the expansion of Honolulu International Airport and Hickam Air Force Base.

During the 1940's, the U.S. military began buying additional land from the Damon family for the construction of the Tripler Army Medical Center Facility. Construction began in 1944 and the hospital was completed in 1950. Following statehood the lands of Moanalua were greatly developed for residential and light industrial uses. By 1978 (Figure 22) the development of the vicinity was much as it remains today.

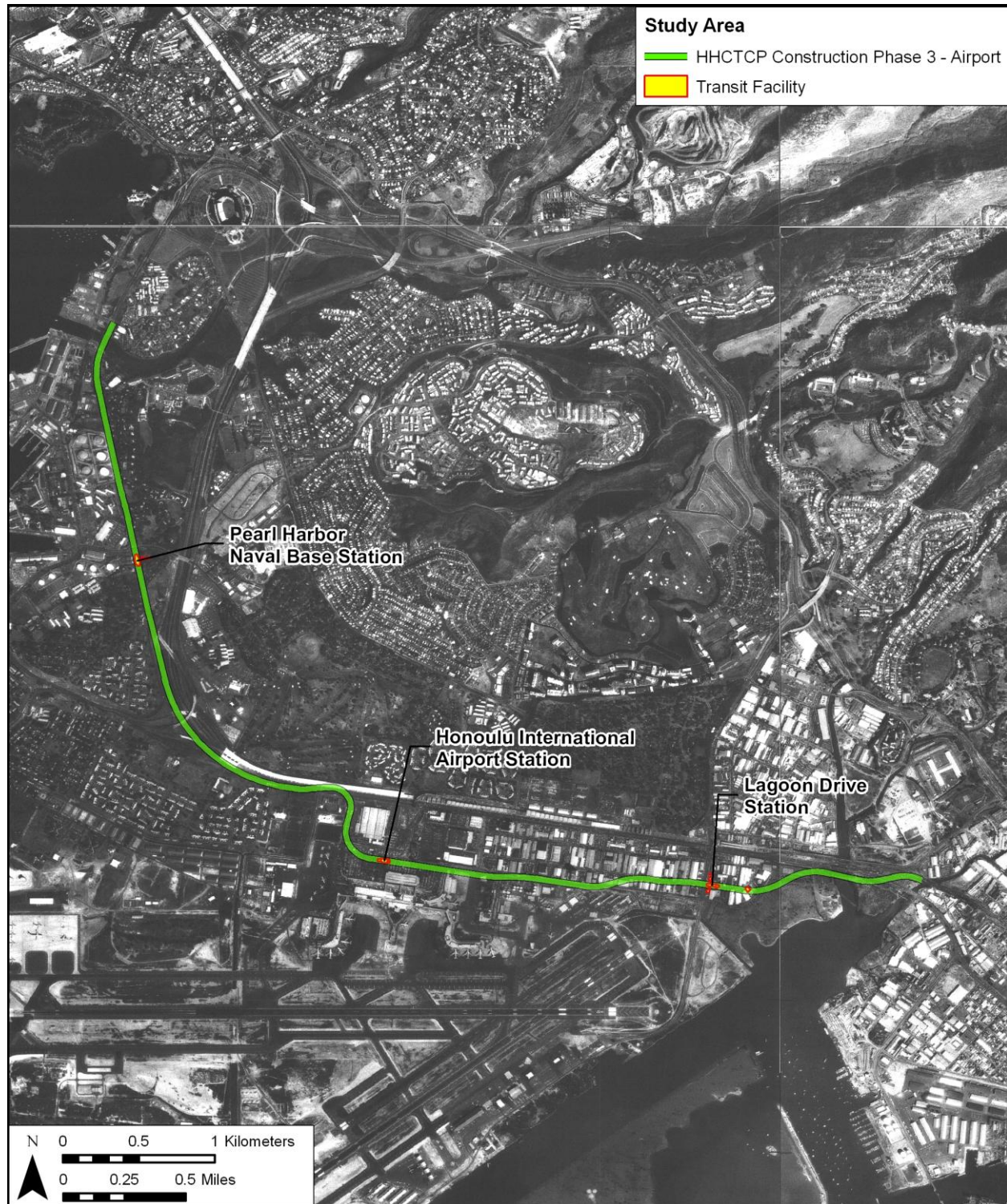


Figure 22. 1978 U. S. Geological Survey Orthophotograph showing project area